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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/455,991	12/06/1999	HISASHI OHTANI	07977/213002	5835

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EXAMINER

DIAZ, JOSE R

ART UNIT PAPER NUMBER

2815

DATE MAILED: 01/29/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/455,991

Applicant(s)

OHTANI ET AL.

Examiner

José R Díaz

Art Unit

2815

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 17 October 2002.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 6-12, 14-16, 18, 20, 21 and 23-71 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 6-8, 18, 20, 21 and 24-71 is/are rejected.
- 7) ☒ Claim(s) 9-12, 14-16 and 23 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☒ Certified copies of the priority documents have been received in Application No. 08/998,964.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 13, 16.
- 4) ☐ Interview Summary (PTO-413) Paper No(s) \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

## DETAILED ACTION

### *Claim Objections*

➤ Claims 23, 39, 47, 63 and 71 are objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. Claims 23, 39, 47, 63 and 71 recite the same limitation incorporated in the last three lines of Claims 9, 31, 40, 55 and 64, respectively.

➤ Applicant is advised that should claims 24-30 be found allowable, claims 48-54 will be objected to under 37 CFR 1.75 as being a substantial duplicate thereof. When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k).

➤ Applicant is advised that should claims 31 and 33-39 be found allowable, claims 9-12, 14-16 and 23 will be objected to under 37 CFR 1.75 as being a substantial duplicate thereof. When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k).

➤ Applicant is advised that should claims 31-39 be found allowable, claims 55-63 will be objected to under 37 CFR 1.75 as being a substantial duplicate thereof.

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When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k).

➤ Applicant is advised that should claims 40-47 be found allowable, claims 64-71 will be objected to under 37 CFR 1.75 as being a substantial duplicate thereof. When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k).

### ***Claim Rejections - 35 USC § 102***

➤ The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

➤ Claims 6-8, 18, 20-21 and 24-71 are rejected under 35 U.S.C. 102(b) as being anticipated by Applicant's Specification (see "Description of the Related Art").

Regarding claim 6, Applicant acknowledges that is well known in the art a method comprising the steps of: forming an amorphous semiconductor film on an insulator surface (see "Description of the Related Art" and Figs. 1B and 8); providing a metal element (811, 812) capable of promoting crystallization of the amorphous

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semiconductor film to form a first metal element added region (a) and a second metal element added region (b) (see Fig. 8, attached hereto); crystallizing the amorphous semiconductor film so that a crystal growth (821, 822, 823, 824) proceeds in a crystal growth direction parallel to the insulating surface to form first and second crystalline portion (c, d) (see Fig. 8, attached hereto); patterning the crystalline semiconductor film to form at least one crystalline island (801) using only the first crystalline portion (c) (see Fig. 8, attached hereto); wherein carrier move in the crystalline semiconductor island (801) in a carrier moving direction identical with the crystal growth direction (821) (see "Description of the Related Art" and Fig. 8); wherein the second metal element added region (b) is located apart from the crystalline semiconductor island (801) by a distance (e) (see Fig. 8, attached hereto); wherein the first metal element added region (a) has a length extending longer from an end portion of the crystalline semiconductor island (801) in a longitudinal direction of the first metal element added region (consider the portion of the metal element (811) that is between the end side of the region (b) and the end side of the crystalline semiconductor island (801)) (see Fig. 8, attached hereto).

Regarding claims 7, 32 and 56, Applicant acknowledges that the lengths of the first metal element added region (a) and the second element added region (b) are set to 50% or more of a crystal growth distance (e) (Compare the length of the distance (e) with the lengths of each region (a, b)).

Regarding claims 8, 25, 33, 41, 49, 57 and 65, Applicant acknowledges that the metal element comprises at least Ni (811) (see Fig. 8 and page 3, line 21 of Applicant's Specification).

Regarding claims 18, 28, 36, 44, 52, 60 and 68, Applicant acknowledges that the amorphous semiconductor film comprises silicon (see "Description of the Related Art").

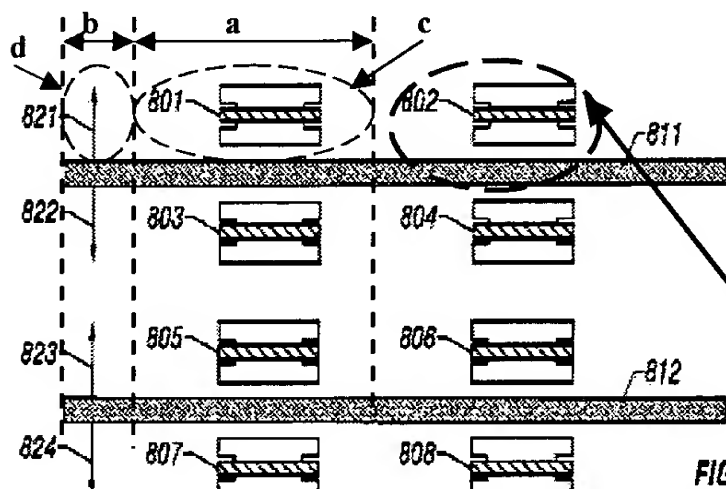
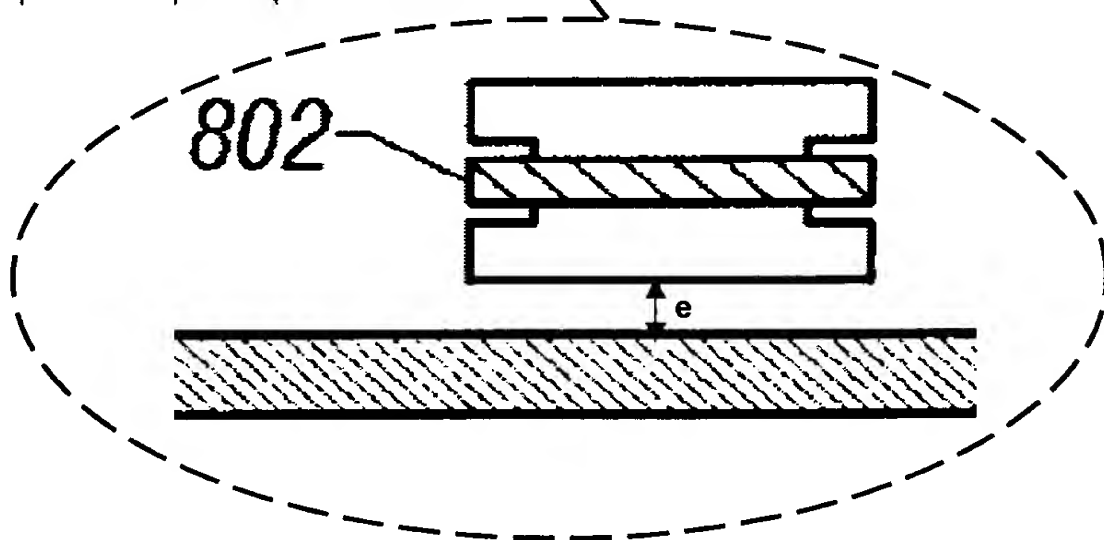


FIG. 8



Regarding claim 20-21, 29-30, 37-38, 45-46, 53-54, 61-62 and 69-70, Applicant acknowledges that at least one of the transistors formed by the method disclosed in the *Description of the Related Art* "has characteristics suitable for high-speed operation" (see page 4, lines 9-11).

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Regarding claims 24 and 48, Applicant acknowledges that is well known in the art a method comprising the steps of: forming an amorphous semiconductor film on an insulator surface (see "Description of the Related Art" and Figs. 1B and 8); providing a metal element (811, 812) capable of promoting crystallization of the amorphous semiconductor film (see Fig. 8, attached hereto); crystallizing the amorphous semiconductor film so that a crystal growth (821, 822, 823, 824) proceeds in a crystal growth direction parallel to the insulating surface from a metal element added region (811, 812) (see Fig. 8, attached hereto); patterning the crystalline semiconductor film to form at least one crystalline island (801) (see Fig. 8, attached hereto); wherein the metal element added region (811, 812) has a length extending longer from an end portion of the crystalline semiconductor island (801) in a longitudinal direction of the metal element added region (811) (see Fig. 8, attached hereto).

Regarding claim 26-27, 34-35, 42-43, 50-51, 58-59 and 66-67, Applicant acknowledges that is well known in the art to introduce the metal element by using conventional method such as ion implantation and coating a Ni solution (see "Description of the Related Art").

Regarding claims 31, 39, 55 and 63, Applicant acknowledges that is well known in the art a method comprising the steps of: forming an amorphous semiconductor film on an insulator surface (see "Description of the Related Art" and Figs. 1B and 8); providing a metal element (811, 812) capable of promoting crystallization of the amorphous semiconductor film to at least two selected regions (c, d) of the amorphous semiconductor film (see Fig. 8, attached hereto); crystallizing the amorphous

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semiconductor film so that a crystal growth (821, 822, 823, 824) proceeds in a crystal growth direction parallel to the insulating surface (see Fig. 8, attached hereto); patterning the crystalline semiconductor film to form at least one crystalline island (801) (see Fig. 8, attached hereto); wherein a portion (d) of the crystalline semiconductor film formed by using one metal element added region (811) is not used to form crystalline semiconductor islands (801) (see Fig. 8, attached hereto).

Regarding claims 40, 47, 64 and 71, Applicant acknowledges that is well known in the art a method comprising the steps of: forming an amorphous semiconductor film on an insulator surface (see "Description of the Related Art" and Figs. 1B and 8); providing a metal element (811, 812) capable of promoting crystallization of the amorphous semiconductor film to at least two selected regions (c, d) of the amorphous semiconductor film (see Fig. 8, attached hereto); crystallizing the amorphous semiconductor film so that a crystal growth (821, 822, 823, 824) proceeds in a crystal growth direction parallel to the insulating surface (see Fig. 8, attached hereto); patterning the crystalline semiconductor film to form at least one crystalline island (801) (see Fig. 8, attached hereto); wherein the metal element added region (811, 812) has a length extending longer from an end portion of the crystalline semiconductor island (801) in a longitudinal direction of the metal element added region (811) (see Fig. 8, attached hereto); and wherein a portion (d) of the crystalline semiconductor film formed by using one metal element added region (811) is not used to form crystalline semiconductor islands (801) (see Fig. 8, attached hereto).

### ***Response to Arguments***

➤ Applicant's arguments with respect to claims 6-8, 18, 20-21 and 24-71 have been considered but are moot in view of the new ground(s) of rejection. With regards to claims 9-12, 14-16 and 23, Applicant has overcome the previous rejection over Zhang et al. (5,529,937) and over Yamazaki et al. (6,077,731). However, such claims have been objected in this Office Action (see "Claim Objections").

### ***Conclusion***

➤ Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

➤ The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Mitnaga et al. (US Pat. No. 6,376,860 B1) and Yamazaki et al. (US Pat. Nos. 6,027,987, 6,100,562 and 6,093,934) are related to the present invention.

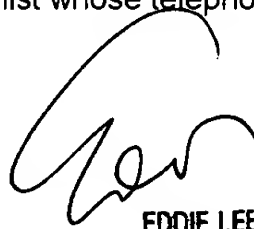
### ***Correspondence***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to José R Díaz whose telephone number is (703) 308-6078. The examiner can normally be reached on 9:00-5:00 Monday, Tuesday, Thursday and Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Eddie Lee can be reached on (703) 308-1690. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7722 for regular communications and (703) 746-3891 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

JRD  
January 23, 2003



EDDIE LEE  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2800